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Notice of Allowability	Application No.	Applicant(s)	
	10/661,466	VITALIANO ET AL.	
	Examiner	Art Unit	
	Russell S. Negin	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to the amendment of 20 November 2006 and the terminal disclaimer of 9 February 2007.
2. The allowed claim(s) is/are 1-29,33-37,41,44 and 46-68.
3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some*
 - c) None
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 11/20/2006
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Franco Vitaliano on 8 February 2007.

The application has been amended as follows:

In the claims:

Please amend the following claims in the instant set of claims to reflect the following changes.

1. (Currently Amended): An isolated non-naturally occurring quantum information processing platform ~~offering precise control over its fabrication and operation~~ comprising,

a plurality of ~~artificially configured~~ quantum information processing elements each having,

~~a man-made cage, up to 100 nanometers in diameter, defining a calculated, artificial cavity that is bioengineered and formed from a plurality of artificially induced self-assembling purified Clathrin protein molecules,~~
and

one or more man-made cargo elements calculatedly located within the man-made cavity, wherein at least one of the cargo elements comprises a man-made, artificially configured qubit element that is by design programmable into a plurality of one or more logical states, which states can deliberately entail, promote, enhance, and exploit the properties of quantum coherence, superposition, entanglement, communications, and other quantum phenomena that are not practically used in naturally occurring systems because by definition the latter do not offer the precise control over their fabrication and operation that is required for quantum information processing,

and

one or more of these man-made elements can be calculatedly expressed as non-naturally occurring quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature, enabling the functional basis of a man-made quantum computer.

2. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the artificially configured quantum information processing elements comprise,
artificially configured receptors for artificially capturing and calculatedly positioning one or more artificially configured cargo elements within the man-made cavity such that it

~~enables non natural placement of one or more cargo elements with minimal inter-element spacings, thereby allowing dense cargo element packing and with minimal inter-cargo interference.~~

3. (Currently Amended): An isolated ~~non~~-natural quantum information processing platform according to claim 2, wherein the ~~artificially configured~~ quantum information processing elements comprise,
~~an artificial vesicle located within the artificially configured cage and enclosing one or more artificially configured cargo elements, wherein the artificially configured receptors extend through the man-made vesicle to capture and calculatedly position an artificially configured cargo element within the man-made vesicle such that it enables non natural placement of one or more cargo elements with minimal inter-element spacings and with minimal inter-cargo interference.~~

4. (Currently Amended): An isolated ~~non~~-natural quantum information processing platform according to claim 3, wherein the ~~artificially configured~~ quantum information processing elements comprise,
~~artificially configured adaptors calculatedly disposed between the receptors and the artificially configured cage and artificially binding to the one or more artificially configured receptors such that it enables non natural placement of one or more cargo elements within the man-made vesicle.~~

5. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ quantum information processing elements comprise,

a ~~man-made~~ vesicle located within the ~~artificially configured~~ cage and ~~artificially~~ and ~~calculatedly~~ enclosing one or more ~~artificially configured~~ cargo elements.

6. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ quantum information processing elements comprise,

~~artificially configured~~ molecular tethers for ~~artificially~~ capturing and ~~non-naturally~~ positioning one or more ~~artificially configured~~ cargo elements within ~~and/or outside~~ the ~~man-made cavity~~.

7. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ quantum information processing elements comprise,

~~artificially configured~~ direct cage bonding for ~~artificially~~ capturing and ~~non-naturally~~ positioning one or more ~~artificially configured~~ cargo elements within ~~and/or outside~~ the ~~man-made cavity~~.

8 (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ quantum information

processing element comprise, ~~artificially configured~~ receptors, molecular tethers and direct cage bonding for ~~artificially~~ capturing and ~~non-naturally~~ positioning one or more ~~artificially configured~~ cargo elements within and or outside the man-made cavity.

9. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the one or more ~~artificially configured~~ cargo elements of a subset of the ~~non-natural~~ quantum information processing elements further comprises a non-permeable, ~~calculated~~, ~~man-made~~ cavity.

10. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 3, wherein the one or more ~~man-made~~ vesicles of a subset of the ~~non-natural~~ quantum information processing elements further comprises a ~~man-made~~ vesicle forming an ~~artificial~~, non-permeable, ~~calculated~~, ~~man-made~~ cavity.

11. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ self-assembling cage is ~~man-made to be~~ electrically neutral and ~~calculatedly~~ inhibits charge transfer between the ~~artificially configured~~ cage and its enclosed, ~~artificially configured~~ cargo elements, ~~thereby deliberately promoting and enhancing quantum coherence.~~

12. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~artificially configured~~ self-assembling cage ~~calculatedly~~ reduces the natural tendency of a plurality of logical states in a quantum coherent state to collapse into a classical decoherent state.

13. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein ~~the~~ ~~an artificially configured non-qubit only~~ cage ~~calculatedly inhibits~~ non-quantum information processing cargo elements from interfering with ~~bio-engineered~~ qubit cargo element operation in ~~one or more other artificially configured cages that calculatedly function as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.~~

14. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 3, wherein the ~~man-made vesicle, by human design,~~ is ~~calculated to be~~ electrically neutral and ~~calculatedly inhibits~~ charge transfer between the ~~man-made vesicle and its enclosed, artificially configured~~ cargo elements.

15. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 3, wherein the ~~artificial~~ vesicle is insulative and ~~non-naturally~~ reduces the ~~usual~~ tendency of a plurality of logical states in a quantum coherent state to collapse ~~when observed or interfered with~~ into a classical decoherent state.

16. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 4, wherein the ~~artificially configured~~ receptors and adaptors are ~~by human design~~ electrically neutral and ~~calculatedly~~ inhibit charge transfer between the ~~man-made~~ vesicle and ~~artificially configured~~ cage and their enclosed, ~~artificially configured~~ cargo elements.
17. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~man-made~~ cage ~~calculatedly~~ reduces ~~natural and man-made~~ contaminant background radiation to ~~artificially configured~~ cargo carried within the ~~artificially configured~~ cage.
18. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 3, wherein the ~~man-made~~ vesicle reduces ~~natural and man-made~~ contaminant background radiation to ~~artificially configured~~ cargo carried within the ~~man-made~~ vesicle.
19. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, comprising an ~~artificial~~, self-assembling framework of ~~artificially configured cages to that by human design~~ structurally support one or more self-assembling ~~artificial~~ QIP quantum information processing elements.

20. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, comprising an ~~artificially configured~~, self-assembling, electrically neutral substrate of ~~artificially configured~~ cages to structurally support one or more of the ~~artificially configured~~ self-assembling, ~~artificially configured~~ quantum information processing elements, ~~forming a calculated design.~~

21. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, comprising an ~~artificially configured~~ self-assembling framework of ~~artificially configured~~ cages to structurally order one or more self-aligning artificial quantum information processing elements, ~~forming a calculated design.~~

22. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the one or more cargo elements of a subset of the quantum information processing elements is a single cargo element comprising a qubit programmable into a plurality of logical states.

23. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the plurality of ~~artificially configured~~ cargo elements of a subset of the ~~artificially configured~~ quantum information processing elements are a plurality of ~~artificially configured~~ cargo elements.

24. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 23, wherein the plurality of artificially configured cargo elements are man-made, artificially configured qubits is calculatedly programmable into a plurality of logical states.

25. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 23, wherein at least some of the plurality of artificially configured cargo elements are non-natural, non-quantum information processing cargo elements.

26. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the one or more artificial elements of a subset of the artificially configured quantum information processing elements calculatedly respond to artificially directed stimuli internal and external to the cage.

27. (Currently amended): An isolated non-natural quantum information processing platform according to claim 3, wherein the one or more vesicles of a subset of the quantum information processing elements respond to stimuli internal and ~~or~~ external to the vesicle.

28. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the one or more quantum information processing elements and their qubit and non-QIP cargo are used in vitro and/or in vivo.

29. (Currently amended): An isolated non-natural quantum information processing platform according to claim 23, wherein a subset of the artificial non-quantum information processing cargo elements include one or more therapeutic artificially configured single-task and/or multitask in-vivo and in-vitro agents that are calculatedly induced to perform a specific task.

33. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 23, wherein a subset of non-naturally occurring qubit and non-quantum information processing cargo elements include one or more man-made, selectable emission quantum dots that calculatedly perform one or more logical operations using spin, and also deliberately having minimal material surrounding the quantum dot, which, by reducing contaminating background radiation, increases quantum coherence times and improves the performance of a quantum computer system and also improves the scalability of a quantum dot-based quantum computer.

34. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 23, wherein a subset of the qubit and non-quantum

information processing cargo elements include one or more ~~man-made~~, selectable emission photonic dots that calculatedly perform one or more logical operations using spin, and also deliberately having minimal material surrounding the photonic dot, which, by reducing contaminating background radiation, increases quantum coherence times and improves the performance of a quantum computer system and also improves the scalability of a photonic dot based quantum computer.

35. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 23, wherein a subset of the ~~artificial~~ cargo elements intentionally include one or more artificially configured liquids without ~~artificial~~ dopants or with one or more ~~artificial~~ dopants of any suitable ~~man-made~~ type that calculatedly produce a desired effect.

36. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 23, wherein a subset of the ~~non-naturally occurring~~ qubit and non-quantum information processing cargo elements include a artificially configured gas or vapor without dopants or with one or more artificially configured dopants of any suitable ~~man-made~~ type that calculatedly produce a desired effect.

37. (Currently Amended): An isolated ~~non-natural~~ quantum information processing platform according to claim 1, wherein the at least one ~~non-naturally occurring~~ qubit of a subset of the plurality of artificially configured quantum information processing elements

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are intentionally programmed to perform logical operations by one or more calculated man-made pulses of electromagnetic radiation, via which qubit cargo elements and their operations calculatedly function as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.

41. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the at least one non-naturally occurring qubit of a subset of the quantum information processing elements includes an unpaired electron and the plurality of logical states of the qubit are defined by one or more electron spin polarization properties and/or attributes.

44. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the at least one non-naturally occurring qubit of a subset of the artificially configured quantum information processing elements includes a nitroxide molecule one or more species of molecules that are calculatedly induced to have one or more logical states, which molecules can be calculatedly expressed as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature..

46. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the at least one non-natural qubit of a subset of the ~~artificially configured~~ quantum information processing elements includes a qubit that is photon-based and the plurality of ~~calculatedly induced~~ logical states of the photon-based qubit includes an ~~artificially induced~~ coherent logical state, which state can be ~~calculatedly expressed as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.~~

47. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~calculated~~ plurality of logical states includes an ~~artificially induced~~ coherent state, which state can be ~~calculatedly expressed as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.~~

48. Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the plurality of ~~calculatedly induced~~ logical states includes an ~~artificially induced~~ coherent state at room temperature, which state can be ~~calculatedly expressed as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.~~

49. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the cage is bioengineered in whole or in part.

50. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the self-assembling protein molecule is a purified clathrin molecule

51. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the cage comprises artificially configured, self-assembling synthetic protein molecules.

52. (Currently amended): An isolated non-natural quantum information processing platform according to claim 4, wherein artificial and artificially configured receptors, adaptors, and vesicle comprise natural and or synthetic protein molecules.

53. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 4, wherein the receptors, adaptors, and vesicle are bioengineered in whole or in part.

54. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein at least a portion of the artificially configured

cage is metal artificially coated in one or more materials that enhance functional performance of the cage.

55. (Currently amended): An isolated non-natural quantum information processing platform according to claim 4, wherein at least a portion of the ~~artificially configured receptors, adaptors, and/or man-made vesicle~~ is metal artificially coated in one or more materials that enhance functional performance.

56. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~man-made cage is artificially induced to be substantially greater than one nanometer in diameter.~~

57. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~man-made cage is artificially induced to be at least about 50 nanometers in diameter.~~

58. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the ~~man-made cage is artificially induced to be at least about 100 nanometers in diameter.~~

59. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein the cage is artificially induced to be symmetric with respect to a plane in order to facilitate a calculated result.

60. (Currently Amended): An isolated non-natural quantum information processing platform element according to claim 1, wherein the artificially configured cage has been artificially ordered to have icosahedral geometry in order to facilitate a calculated result.

61. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein at least one of the plurality of man-made cages includes a plurality of artificially configured qubits and a subset of the plurality of qubits are intentionally and linearly positioned by means of artificial inducement at one or more desired vertices along a single plane using circulant ordering in order to facilitate a calculated result.

62. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, wherein by means of artificial inducement a subset of the quantum information processing elements are physically linked together, which elements can be calculatedly expressed as quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.

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63. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein ~~by means of artificial inducement~~ a subset of the ~~artificially configured~~ quantum information processing elements are functionally linked together, either locally and or at an arbitrary distance, ~~which quantum information processing elements can be calculatedly expressed as man-made quantum memory, register, bus, wire, logic gate, communications, error correction, i/o module, encoder, decoder, and other information processing functions not found in nature.~~

64. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1, comprising an encoder for programming the at least one qubit of a subset of the quantum processing elements.

65. (Currently Amended): An isolated non-natural quantum information processing platform according to claim 1 comprising, a decoder for reading information out of the at least one ~~artificial~~ qubit of a subset of the ~~artificially configured~~ quantum processing elements.

66. (Currently amended): An isolated non-natural quantum information processing platform according to claim 1, wherein a subset of the ~~artificially configured~~ quantum information processing elements ~~calculatedly form an artificial hybrid system upon their being artificially induced to perform physical and or functional integration with one or more non-invention elements in vitro and in or vivo.~~

67. (Currently Amended): A method for a ~~non-naturally occurring~~ quantum information processing platform ~~offering precise control over its fabrication and operation comprising,~~

providing one or more ~~artificially configured~~ quantum information processing elements, each ~~artificial~~ quantum information processing element comprising a man-made cage up to 100 nanometers in diameter defining a ~~calculated~~, man-made cavity formed from a plurality of ~~artificially induced~~ self-assembling purified Clathrin protein molecules,

and

one or more ~~artificially configured~~ cargo elements located within the man-made cavity, wherein,

at least one of the ~~non-natural~~ cargo elements comprises a ~~non-naturally occurring~~ qubit that is by design programmable into a plurality of logical states; explicitly programming the one or more quantum information processing elements using an man-made encoder;

and

reading information from the one or more quantum information processing elements using a man-made decoder.

68. (Currently Amended): A quantum information processing platform according to claim 1, wherein the quantum information processing elements comprise,

a functionalized ~~artificially configured~~ cage for ~~calculatedly~~ attaching one or more artificial elements external to the ~~artificially configured~~ cage.

In the Abstract

Please amend the abstract to recite the following in its entirety:

The invention in various embodiments is directed to ~~artificially configured~~ quantum information processing elements and ~~artificially configured~~ quantum information processing platforms employing such elements. In one aspect, the ~~artificially configured~~ quantum information processing elements are formed with self-assembling purified Clathrin protein molecules.

Conclusion

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Irem Yucel, Supervisory Patent Examiner, can be reached at (571) 272-0781.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.
For more information on the PAIR system, contact the Electronic Business Center
(EBC) at 866-217-9197 (toll-free).

RSN
16 February 2007

[Signature]
16 Feb 2007

jsb Brusca 16 February 2007
JOHN S. BRUSCA, PH.D.
PRIMARY EXAMINER